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The field period of the 1988 Physicians' Practice Costs and Income Survey (PPCIS) began July 24, 1989 and ended March 31, 1990, lasting over eight months to complete 3,505 cases. The response rate was 61 percent. The objective of this analysis was to determine whether there are systematic differences between those responding at the tail end of the survey and those responding earlier in the field period.

Both descriptive and multivariate analysis were performed. No difference was found in average number of hours worked per week, number of hours spent on medical activities and administrative duties, the number of patient visits, and percent of hours spent on surgical procedures for early and late responders to the survey. Solo practitioners responded earlier than group practitioners. Urban physicians were more likely to be late responders than those in rural practice. There were no significant differences for age, gender, race, ethnicity, foreign medical graduate status, board certification status and region. The multivariate analysis showed that the probability of a late response varies systematically in several respects. Busier physicians, large practices, employee physicians, and higher earning physicians had higher probability of late response. When to end a field period is often dominated by budget concerns in the absence of empirical information on the effects of lengthening or shortening the field period. This study concludes that care should be exercised in terminating a field period prematurely because of systematic differences between early and late responders.

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COMPARISON OF EARLY AND LATE RESPONDERS TO THE 1988 PHYSICIANS' PRACTICE COSTS AND INCOME SURVEY

Final Report

in cooperation with

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Center for Health Economics Research

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COMPARISON OF EARLY AND LATE RESPONDERS TO THE 1988 PHYSICIANS' PRACTICE COSTS AND INCOME SURVEY

Final Report

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September 1992

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COMPARISON OF EARLY AND LATE RESPONDERS TO THE 1988 PHYSICIANS' PRACTICE COSTS AND INCOME SURVEY

1.0 INTRODUCTION

One of the key decisions that is made during the field period of any physician survey is when to end the interviewing. At some point, the marginal costs of continuing the field period begin to exceed the gains in the response rates (both unit and item response). One of the concerns, however, is that premature termination of the field period could result in systematic exclusion of certain types of physicians, such as those who are busier, have higher earnings, or are in larger practices.

The field period of the 1988 Physicians' Practice Costs and Income Survey (PPCIS) began July 24, 1989 and ended March 31, 1990, lasting just over eight months to complete 3,505 cases (Thalji, et al., 1991). The response rate was 61 percent. Other recent surveys of physicians have involved shorter field periods. The Physician Payment Review Commission's 1987 National Survey of Physicians completed 2,828 cases over a six or seven month field period, with a response rate of 62 percent.* The American Medical Association's 1989 Socioeconomic Monitoring System had a five month field period to complete 4,104 cases and obtained a 72 percent response rate.** The surveys differ substantially in their staffing configurations, mode of data collection, eligibility criteria, length and complexity of questionnaire, sensitivity of questions, and level of completeness (item nonresponse), which all figure into the amount of field time that is required and help to explain the differing levels of productivity.

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*Information on the NSP field period was obtained from Berk et al. (undated). The report indicates that the NSP field period lasted "between 6 to 7 months" (pg. 2-1).

**Information on the length of the SMS field period was obtained from Sara Thran of the AMA.

In the case of the 1988 PPCIS, many discussions were held concerning when to end the field period. Budget constraints favored an earlier end date, while concerns about the response rate and representativeness of the respondents favored a later end date. In particular, concerns were expressed that physicians responding in the later stages of the field period would be different from those who responded earlier. This report, based on the 1988 PPCIS, investigates the characteristics of physicians who responded at the end of the survey period versus those who responded earlier in the field period. We explore several hypotheses for predictors of late response:

- Busier physicians will respond later because they are less available.
- Physicians in larger practices and physician employees will be more likely to be later responders because of the "red tape" involved in gaining cooperation.
- Physicians in practices with more administrative employees will be more likely to respond later, (i.e., the gatekeeper effect).
- Physicians with higher opportunity costs (i.e., higher hourly wages) will also be later responders.
- Participation in the Medicare/Medicaid programs may reflect a predisposition towards participating in the HCFA-sponsored survey (perhaps to use the survey as a platform to voice opinions) and therefore, participants will respond earlier.
- The later the case is fielded during the survey period, the later the case will be completed, all other things being equal.

The objective of this analysis is to determine whether there are systematic differences between those responding at the tail end of the survey and those responding earlier in the field period. In order to better understand the possible predictors of early versus late response, we performed both descriptive and multivariate analysis. Chapter 2 describes the data and methods that were used. Chapter 3 presents both the descriptive and multivariate results. Chapter 4 discusses the implications of the results for future surveys of physicians.

2.0 DATA AND METHODS

2.1 Data Source

This analysis is based on the 1988 Physician's Practice Costs and Income Survey, a nationwide survey of a stratified random sample of physicians (stratified by specialty, Census Division, and urbanicity). Physician eligibility for the survey was based on the following criteria:

(1) Currently provide patient care (or services) for at least 20 hours a week;

(2) Not currently a resident, clinical fellow, or a research fellow;

(3) Not employed by a faculty practice plan, hospital, clinic, HMO, or federal government agency in 1988;

(4) If in a multipractice arrangement, greater than 80 percent of income must come from the practice in which the physician was full or part owner or employee;

(5) Have spent at least 20 hours per week in patient care (or services) during 1988; and

(6) Have been in the same private practice for all of 1988.

Of the total sample screened, 36 percent, or 3,015 physicians were ineligible to participate and were thus excluded from the survey. Most of these physicians were ineligible because of their employment arrangement. The final number of completed cases was 3,505, achieving an overall response rate of 61 percent.

2.2 Methods

The first step in this analysis was to classify physicians according to the date on which they completed the survey. This was done based on the variable INTDATE on the public use file, the date on which the case was considered complete. We created three new analytic

variables in order to set the parameters for late response:

Variable	Definition	N
LATE1	Cases which were completed in the last two weeks of the field period (March 15 to March 31)	275
LATE2	Cases which were completed in the last month of the field period (March 1 to March 31)	504
LATE3	Cases which were completed in the last two months of the field period (February 1 to March 31)	851

Additional variable construction was required for the independent variables that are used in this analysis. Table 1 defines and identifies the source of the variables. Statistical significance was first tested using t-tests for continuous variables and chi-square tests for categorical variables. To control for the independent effects of each factor on the probability of late response, we also performed logistic regression analysis. Unweighted statistics were used in order to assess individual physician responses, independent of sampling adjustments.

3.0 RESULTS

3.1 Descriptive Analysis

Table 2 shows the distribution of completed cases by month. One-fourth of the cases were completed in the last two months of the field period (corresponding with one-fourth of the field period). Production was low during December and January for two reasons: first, because of the holidays and second, because a temporary stop-work order was issued due to budgetary constraints. At the end of the field period, production was actually on the upswing, with 45 percent more cases completed in the last month of the survey than in the next to the last month. This is depicted graphically in Figure 1, where we see that the production of completed cases rose in the last four months of the survey to levels achieved in the first half of the field period.

Early and late responders are compared using three "thresholds" for late response: within the last two weeks, the last month, and the last two months. Tables 3 and 4 present

descriptive statistics for responders in the last two weeks. Tables 5 and 6 are for the last month and tables 7 and 8 are for the last two months. The first table in each set presents the results on continuous variables (Tables 3, 5, and 7), while the second table presents the results on the categorical variables (Tables 4, 6, and 8). Since the results for all three definitions of late response were very similar, LATE2 (responding in the last month) will serve as our benchmark for discussing the results (Tables 5 and 6).

Our first hypothesis is related to the effect of physician availability, and the ability to respond in a timely manner. We assumed that busier physicians would be later responders than others. Later responders consistently had a lower number of weeks not practiced compared to early responders. (The fewer weeks that a physician did not practice, the busier the practice.) For example, those responding in the last month averaged 3.9 weeks not practiced compared with 4.2 weeks for the earlier responders. However, no difference was found in the average number of hours worked per week, with both groups averaging 59 hours in the most recent week of practice. Additionally, no differences were found on other measures of physician availability including the number of hours spent on medical activities and administrative duties, the number of patient visits, and the percent of hours spent on surgical procedures (data not shown).

Next, we tested the hypothesis that later responders were more likely to be in larger practices. This hypothesis is based on the assumption that physicians in larger practices would have less personal authority to participate and would have to obtain permission from other members of the practice to participate (i.e., the "red-tape" effect). As expected, as the number of full-time equivalent (FTE) physicians increased, the probability of later response also increased. For those physicians who completed the survey in the last month, the average number of FTEs was 7.4, compared to 5.4 for somewhat earlier responders. Solo practitioners were expected to be earlier responders, in theory, because they would not have to sort through bureaucratic red-tape to participate. Indeed, solo practitioners were found to be somewhat earlier responders: 14 percent of solo practitioners versus 16 percent of those in group practice responded in the last month.

Physician employees also had a higher likelihood of being later responders than those who were full or part owners of their practice. Once again, this is likely a function of their

"authority" to respond. Employees would be more likely to have to obtain permission from the owner(s) of the practice in order to participate, thereby delaying the completion of the survey. Whereas 14 percent of physician owners responded in the last month, 22 percent of the physician employees were late responders. No significant differences were found for physicians in incorporated practices or multispecialty practices.

Another hypothesis concerned the role of the "nonphysician gatekeeper": we hypothesized that interviewers might face more difficulties contacting physicians in practices with more nonphysician employees (especially more administrative employees). However, there were no significant differences between early and late responders in the total number of nonphysician employees or more specifically, in the number of administrative or clerical employees.

The physicians' opportunity costs for participating in the survey appear not to be a factor in determining whether a physician would be an earlier or later respondent, as reflected by the hourly wage and the net income. The average hourly wage for physicians who responded in the last month was $60.80 while the wages of physicians who responded earlier was $61.90.

Another possible factor in a physician's decision when to respond may be his/her attitude toward HCFA, the sponsor of the survey. In the absence of direct measures of a physician's attitude toward HCFA, we looked at Medicare/Medicaid participation rates and caseloads. None of the measures were found to be significant determinants of early versus late response. Both groups averaged 32-33 percent of their revenues from Medicare and 9 percent from Medicaid.

Finally, we had hypothesized that the replicate in which the case was fielded would play a role in determining who responded late in the field period. However, replicate was not a significant determinant of response in the last two weeks or the last month. However, cases in replicate 13 had the highest rate of response in the last two months (36 percent), followed by replicate 3 (27 percent), replicate 5 (28 percent), and replicate 14 (28 percent). Interestingly, this does not follow any chronological pattern of when the cases were fielded.

We had no a priori hypotheses about the relationship between late response and demographic characteristics of physicians. However, we found that physicians in urban

practices were more likely to be later responders than those in rural practices for all three variables. For example, 16 percent of physicians in urban practices responded in the last month compared with 13 percent in rural practices. There were no significant differences for any of the other characteristics, including age, gender, race/ethnicity, foreign medical graduate status, board certification status, and region.

Response patterns according to specialty varied across the three analytic variables. No significant differences in the specialty mix were observed on the first two variables (last two weeks and last month). Yet, physicians responding in the last two months differed significantly by specialty. Internists (32 percent) and GP/FPs (31 percent) had the highest probability of response in the last two months, while orthopedic surgeons (19 percent) and anesthesiologists (20 percent) had the lowest rates.

3.2 Multivariate Analysis

Descriptive statistics identify the likelihood of late response in a bivariate context. However, we are also interested in the independent effect of each variable on the probability of late response. For example, because physician employees tend to be affiliated with large groups, the descriptive analysis does not provide any hint of the independent effect of being an employee versus being in a large group on the probability of late response. Therefore, logistic regression analysis was performed using the three analytic variables as our dependent variables. (See Table 9.) Coefficients show the probability of late response; hence a positive sign indicates a direct relationship, while a negative sign signifies an inverse relationship.

Explanatory variables were selected based upon the six hypotheses stated previously: physician availability, red-tape effect, gatekeeper effect, opportunity costs, attitude, and replicate. Demographic variables were used to control for certain physician characteristics which could also affect early and late response.

As shown in Table 9, by the last two weeks of the survey period, there were no significant differences between early and late responders in the level of work effort. However, those responding in the last month (and to a lesser extent in the last two months) were busier

in that they worked more weeks during the year and they worked more hours during the week. These results suggest that busier physicians accounted for a disproportionate share of responses in the last month or two of the field period.

Physicians responding in the last two weeks of the survey were more likely to be from group (rather than solo) practices and were more likely to be employees of the practice (rather than full or part owners). Moreover, as group size increased, the probability of late response also increased. Multispecialty groups, however, had a lower probability of response in the last two weeks. These findings support our hypotheses about the "red-tape" effect in deterring early response. Where physicians may need authorization to participate, the likelihood of late response clearly increases.

Next, we tested for "gatekeeper effects." The probability of responding in the last two months of the survey is inversely related to the number of nonphysician employees, ceteris paribus. Contrary to our expectations, this suggests that instead of serving as gatekeepers, nonphysician employees may in fact be assisting in the completion of the survey to enable earlier response. They may serve as proxy respondents or perhaps prepare the cost worksheet for the physician to use in completing the interview. However, this effect is not observed across the other two time periods.

Medicare and Medicaid caseloads serve as a proxy for physician attitudes toward HCFA and the survey.* It was hypothesized that physicians with higher levels of public program participation would have either a more positive attitude toward HCFA or a desire to use the survey as a platform to voice opinions about these programs. However, there were no significant results supporting this hypothesis.

The physician's hourly wage was used as a measure for opportunity costs in participating in the survey. Higher wage physicians were expected to be later responders and indeed, this was found to be the case, ceteris paribus.**

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*An alternative measure, whether the physician signed the Medicare Participation Agreement in January 1989, also was found to be nonsignificant in all of the equations.

**It may be recalled that no differences were found in the descriptive analysis. It would appear, however, that the opportunity cost of a physician's time is a significant factor in late response once other factors are controlled.

The results on the replicate dummy variables are mixed and difficult to interpret. As might be expected, cases fielded in the last two replicates had a higher probability of response in the last two months. Interviewers had less time to work these cases, thereby raising the chances of later response. However, the remaining results appear somewhat random and inexplicable. Physicians in the fourth and eighth replicates had a lower probability of response in the last two weeks, compared with those in the first replicate. Given that the replicates are intended to be individual random samples within the larger random sample, it is unclear why these two replicates would "outperform" the others in terms of early response.

Demographic characteristics were included as control variables in the analysis. Interestingly, we observed an age effect in the probability of response in the last month or two. Because we hypothesized a nonlinear age effect, we included the quadratic age term. The probability of late response was found to rise with age and then fall, taking on an inverted U shape. We might speculate that an older physician would have a more established, busier practice than a younger physician (and the opportunity cost of participating would be higher). However, as physicians age, their practice loads peak, making them more available or willing to participate in the survey.

Physicians in urban practices had a higher probability of responding in the last two months (but not specifically within the last two weeks or in the last month), perhaps because they are busier than their rural colleagues.

The final set of variables reflects the specialty mix of late responders. Compared to GPs/FPs (the omitted specialty), only anesthesiologists had a significantly lower probability of responding in the last two weeks. Specialty differences are more apparent in the two earlier time periods. To further illucidate this result, we examined the frequency distribution of responses by month for selected specialties. Figure 2 shows the number of completed cases by month for five selected specialties: GPs/FPs, internists, cardiologists, cardiovascular/thoracic surgeons, and anesthesiologists. The GPs/FPs and internists appear to have had a major surge of activity in the last two months, compared with the other three specialties which were fairly stable. This explains the negative coefficients on the specialty dummy variables relative to the GPs/FPs and the nonsignificant relationship between GPs/FPs and internists.

Late response among GPs/FPs could indicate that these specialties were *less* cooperative and took longer to reach. Alternatively, these specialties may have been *more* cooperative than others, and interviewers may have been able to complete these cases at the end of the survey when others were less cooperative. We would speculate that the sharp upswing in the number of completed cases in the last two months reflects concerted efforts to interview these two specialties, since historically they have been relatively cooperative.

4.0 DISCUSSION

This analysis has shown that the probability of late response varies systematically in several respects. First, busier physicians had a higher probability of late response. Second, there were noticeable differences across practice arrangements, with the probability of late response increasing with practice size, as well as for physician employees (versus full or part owners). Third, higher earning physicians were more likely to be late responders. Thus, it appears that there are some important differences in the practice characteristics of those responding at the end of the survey.

What are the analytic implications of these results? To the extent that higher earning physicians respond later in the field period, estimates of physician income would be biased downwards if the field period were terminated prematurely. As another example, the omission of physicians in large group practices could affect the robustness of studies attempting to model economies of scale in physician practice. Previous studies have documented a U-shaped relationship between group size and practice expenses (Hurdle and Pope, 1989; Kimbell and Lorant, 1977; Pope and Burge, 1992). Without a substantial sample of physicians in large group practices, the tail end of the distribution could be truncated, diminishing the ability of the sample to detect returns to scale in physician practice.

These findings suggest that future survey efforts should develop pre-emptive measures for certain types of physicians that have been found to be late responders. For example, letters or other materials could be developed to "pave the way" for physicians in large practices and physician employees to obtain authorization to participate. Increased (and

earlier) use of proxies might also improve the likelihood of early response, especially among busier physicians.

When to end a field period is usually a difficult decision for survey researchers to make. Oftentimes, the decision is dominated by budget concerns in the absence of empirical information on the effects of shortening or lengthening the field period. However, this analysis suggests that survey researchers need to be careful in determining when to end the field period because of the systematic differences between early and late responders. In particular, it may take some time for the busy, high earning physicians, especially those in large group practices, to obtain permission or to make the time to participate.

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TABLE 1
CONSTRUCTION OF ANALYTIC VARIABLES

Variable Name	Definition	Source*
LATE1	Identifies cases which were considered complete from 3/15/90 to 3/31/90 versus all others.	INTDATE
LATE2	Identifies cases which were considered complete from 3/01/90 to 3/31/90 versus all others.	INTDATE
LATE3	Identifies cases which were considered complete from 2/01/90 to 3/31/90 versus all others.	INTDATE
PRD8	The number of weeks which the physician did not practice in 1988.	PRD8
PRD9A	The number of hours which the physician worked in the last week of practice.	PRD9A
FTE	The number of full-time equivalent physicians.	SIZ12A + (SIZ12C / 3)
INCORP	Indicator of whether practices are incorporated.	IF SCR7C=3 THEN INCORP=1; ELSE IF SCR7C=1,2,4,OR 5 THEN INCORP=0
MDEMP	The physician is an employee.	If SCR5B=1, then MDEMP=1 else if SCR5A=1, then MDEMP=0,
MULTSPEC	The practice is multispecialty.	MULTSPEC
SOLO	The physician is a solo practitioner.	SOLO
SIZ14	The number of non-physician employees.	IMP14
SIZ15H1	The number of administrative and clerical employees.	SIZ15H1
MDWAGE	The physician's hourly wage. Imputed data were used in order to reduce attrition.	IMPNET / ((IMP9A * (52-IMP8))
NET	The physician's net income.	IMPNET
MED38B	The percentage of the physician's income which comes from Medicare patients.	MED38B
MED38C	The percentage of the physician's income which comes from Medicaid patients.	MED38C
MEDICARE	The physician accepts Medicare patients.	MEDICARE
MEDICAID	The physician accepts Medicaid patients.	MEDICAID
MEDPAT	The percent of revenues from Medicare and Medicaid.	SUM (MED38B,MED38C)

TABLE 1 ,cont'd.
CONSTRUCTION OF ANALYTIC VARIABLES

REPLCATE	A series of dummy variables constructed to control for when the case was fielded.	REPLCATE
AGE	The physician's age in 1988.	AGE
SEX	A dummy variable for the gender of the physician (female=1).	SEX
RACE	A dummy variable for the race/ ethnicity of the physician (white=1).	IF DEM43=1 THEN RACE=1; ELSE IF DEM43>1 THEN RACE=0
FMG	Indicator of whether the physician is a foreign medical graduate (yes=1).	FMG
BOARD	Indicator of whether the physician is board certified (yes=1).	BOARD
SMSA	A dummy variable for urban/rural location (urban=1).	SMSA
REGION	A series of dummy variables for region of the country in which the physician practices.	REGION
SPECIALTY	A series of dummy variables indicating the specialty of the physician.	SELFSPEC

*Refers to variable names on the PPCIS Public Use File (Dayhoff _et_ _al._ ,1992).

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 2
DISTRIBUTION OF COMPLETED CASES BY MONTH

Completion Date	Frequency	Percent	Cumulative Percent
July 24 through August 31	491	14.6	14.6
Sept. 1 through Sept. 30	433	12.9	27.5
Oct. 1 through Oct. 31	592	17.6	45.2
Nov. 1 through Nov. 30	454	13.5	58.7
Dec. 1 through Dec. 31	252	7.5	66.3
Jan. 1 through Jan. 31	283	8.4	74.6
Feb. 1 through Feb. 28	347	10.3	85.0
March 1 through March 31*	504	15.0	100.0
(March 15 through March 31)	(275)	(8.2)	

* Also includes mail questionnaires with a completion date of 5/1/90, the date they were accepted as completed questionnaires.

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 3
COMPARISON OF EARLY AND LATE RESPONDERS: LAST TWO WEEKS

	Survey Completed In Last Two Weeks (n=275)		Survey Completed Before Last Two Weeks (n=3,081)		
Characteristic	Mean	Standard Deviation	Mean	Standard Deviation	t-value
Availability					
Number of weeks did not practice in 1988	4.0	2.4	4.1	2.8	1.14
Number of hours worked in last week	58.9	16.9	59.0	16.1	0.10
"Red-Tape" Effect					
Number of full-time equivalents	8.9	28.9	5.4	14.0	-1.98 **
"Non-MD Gatekeeper" Effect					
Number of employees	18.9	55.2	17.0	53.5	-0.56
Number of administrative employees	9.0	20.9	8.1	22.8	-0.60
Opportunity Costs					
Physician's hourly wage	$ 64.7	$ 49.4	$ 61.5	$ 50.5	-1.03
Physician's net income	$ 173,928	$ 127,704	$ 163,981	$ 127,149	-1.24
Attitude					
Medicare caseload (%)	30.8	22.6	33.0	22.3	1.54
Medicaid caseload (%)	9.1	11.5	8.8	11.2	-0.42
Demographics					
Physician's age	45.9	9.8	46.7	10.5	1.14

* Statistically significant at 0.10 level or better.
** Statistically significant at 0.05 level or better.
*** Statistically significant at 0.01 level or better.

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 4
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST TWO WEEKS

	Survey Completed In Last Two Weeks		Survey Completed Before Last Two Weeks	
Characteristic	n	%	n	%
"Red-Tape" Effect				
Practice is incorporated (chi-sq.=.414, p=.520)				
No	104	7.8	1,225	92.2
Yes	171	8.5	1,853	91.6
Physician is an employee (chi-sq.=9.808, p=.002)				
No	226	7.7	2,729	92.4
Yes	49	12.2	352	87.8
Practice is multispecialty (chi-sq.=.570, p=.450)				
No	240	8.3	2,636	91.7
Yes	35	7.3	443	92.7
Physician is a solo practitioner (chi-sq.=3.378, p=.066)				
No	158	9.1	1,588	91.0
Yes	117	7.3	1,485	92.7
Attitude				
Accepts Medicare patients (chi-sq.=2.639, p=.104)				
No	25	11.1	201	88.9
Yes	250	8.0	2,878	92.0
Accepts Medicaid patients (chi-sq.=.050, p=.824)				
No	44	8.5	477	91.6
Yes	231	8.2	2,602	91.9
Replicate				
(chi-sq.=19.265, p=.082)				
1	23	9.1	231	90.9
2	21	8.3	233	91.7
3	27	9.3	264	90.7
4	15	6.3	222	93.7
5	26	10.5	221	89.5
6	26	9.8	240	90.2
7	27	10.2	237	89.8
8	16	5.7	266	94.3
9	18	7.4	227	92.7
10	14	5.3	249	94.7
12	20	7.6	245	92.5
13	29	12.1	211	87.9
14	13	5.2	235	94.8

TABLE 4, cont'd.
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST TWO WEEKS

	Survey Completed In Last Two Weeks		Survey Completed Before Last Two Weeks	
	n	%	n	%
Demographics				
Gender				
(chi-sq.=1.472. p=.225)				
Male	250	8.0	2,862	92.0
Female	25	10.3	219	89.8
Race				
(chi-sq.=.057, p=.812)				
White	218	7.9	2,546	92.1
Other	46	8.2	516	91.8
Graduate of a foreign medical school				
(chi-sq.=.530, p=.467)				
No	211	8.0	2,422	92.0
Yes	64	8.9	659	91.2
Board certified				
(chi-sq.=.131, p=.717)				
No	70	8.5	754	91.5
Yes	205	8.1	2,327	91.9
SMSA				
(chi-sq.=3.397, p=.065)				
Rural	53	6.6	746	93.4
Urban	222	8.7	2,335	91.3
Region				
(chi-sq.=5.264, p=.153)				
Northeast	71	10.2	626	89.8
Midwest	53	7.2	688	92.9
South	96	8.1	1,086	91.9
West	55	7.5	681	92.5

(Continued on next page)

TABLE 4, cont'd.
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST TWO WEEKS

	Survey Completed In Last Two Weeks		Survey Completed Before Last Two Weeks	
	n	%	n	%
Specialty				
(chi-sq.=11.401, p=.724)				
GP/FP	32	7.9	375	92.1
Internal Medicine	31	8.6	328	91.4
Cardiology	7	5.0	132	95.0
Gastroenterology	10	7.2	129	92.8
Other Medical	27	9.6	253	90.4
General Surgery	16	7.5	197	92.5
Orthopedic Surgery	16	11.5	123	88.5
Ophthalmology	14	8.7	147	91.3
Urology	13	7.3	165	92.7
Obstetrics and Gynecology	22	8.6	234	91.4
Cardiovascular Surgery	12	7.7	144	92.3
Other Surgery	14	8.1	159	91.9
Psychiatry	23	11.3	180	88.7
Anesthesiology	10	4.8	197	95.2
Radiology	15	8.7	158	91.3
Other Specialties	13	7.5	160	92.5

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 5
COMPARISON OF EARLY AND LATE RESPONDERS: LAST MONTH

	Survey Completed In Last Month (n=504)		Survey Completed Before Last Month (n=2,852)		
Characteristic	Mean	Standard Deviation	Mean	Standard Deviation	t-value
Availability					
Number of weeks did not practice in 1988	3.9	2.2	4.2	2.9	2.65 ***
Number of hours worked in last week	59.3	17.6	59.0	15.9	-0.46
"Red-Tape" Effect					
Number of full-time equivalents	7.4	22.5	5.4	14.3	-1.99 **
"Non-MD Gatekeeper" Effect					
Number of employees	18.5	51.6	17.0	54.0	-0.60
Number of administrative employees	9.0	21.2	8.1	22.8	-0.90
Opportunity Costs					
Physician's hourly wage	$ 60.8	$ 45.1	$ 61.9	$ 51.4	0.48
Physician's net income	$ 165,050	$ 121,155	$ 164,752	$ 125,265	-0.05
Attitude					
Medicare caseload (%)	32.1	22.6	33.0	22.3	0.78
Medicaid caseload (%)	8.6	11.6	8.8	11.2	0.34
Demographics					
Physician's age	46.7	10.2	46.6	10.5	-0.12

* Statistically significant at 0.10 level or better.
** Statistically significant at 0.05 level or better.
*** Statistically significant at 0.01 level or better.

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 6
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST MONTH

	Survey Completed In Last Month		Survey Completed Before Last Month	
Characteristic	n	%	n	%
"Red-Tape" Effect				
Practice is incorporated (chi-sq.=.006, p=.940)				
No	199	15.0	1,130	85.0
Yes	305	15.1	1,719	84.9
Physician is an employee (chi-sq.=18.379, p=.000)				
No	415	14.0	2,540	86.0
Yes	89	22.2	312	77.8
Practice is multispecialty (chi-sq.=.026, p=.871)				
No	431	15.0	2,445	85.0
Yes	73	15.3	405	84.7
Physician is a solo practitioner (chi-sq.=3.087, p=.079)				
No	281	16.1	1,465	83.9
Yes	223	13.9	1,379	86.1
Attitude				
Accepts Medicare patients (chi-sq.=2.401, p=.121)				
No	42	18.6	184	81.4
Yes	462	14.8	2,666	85.2
Accepts Medicaid patients (chi-sq.=.395, p=.530)				
No	83	15.9	438	84.1
Yes	421	14.9	2,412	85.1
Replicate				
(chi-sq.=13.635, p=.325)				
1	36	14.2	218	85.8
2	34	13.4	220	86.6
3	40	13.8	251	86.3
4	34	14.4	203	85.7
5	46	18.6	201	81.4
6	43	16.2	223	83.8
7	44	16.7	220	83.3
8	38	13.5	244	86.5
9	37	15.1	208	84.9
10	33	12.6	230	87.5
12	35	13.2	230	86.8
13	50	20.8	190	79.2
14	34	13.7	214	86.3

TABLE 6, cont'd.
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST MONTH

Characteristic	Survey Completed In Last Month n	Survey Completed In Last Month %	Survey Completed Before Last Month n	Survey Completed Before Last Month %
Demographics				
Gender (chi-sq.=.192 p=.661)				
Male	465	14.9	2,647	85.1
Female	39	16.0	205	84.0
Race (chi-sq.=.585, p=.445)				
White	403	14.6	2,361	85.4
Other	89	15.8	473	84.2
Graduate of a foreign medical school (chi-sq.=1.802, p=.180)				
No	384	14.6	2,249	85.4
Yes	120	16.6	603	83.4
Board certified (chi-sq.=.663, p=.416)				
No	131	15.9	693	84.1
Yes	373	14.7	2,159	85.3
SMSA (chi-sq.=4.167, p=.041)				
Rural	102	12.8	697	87.2
Urban	402	15.7	2,155	84.3
Region (chi-sq.=3.916, p=.271)				
Northeast	115	16.5	582	83.5
Midwest	100	13.5	641	86.5
South	187	15.8	995	84.2
West	102	13.9	634	86.1

(Continued on next page)

TABLE 6, cont'd.
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST MONTH

	Survey Completed In Last Month		Survey Completed Before Last Month	
Characteristic	n	%	n	%
Specialty				
(chi-sq.=12.548, p=.637)				
GP/FP	69	17.0	338	83.1
Internal Medicine	64	17.8	295	82.2
Cardiology	18	13.0	121	87.1
Gastroenterology	25	18.0	114	82.0
Other Medical	45	16.1	235	83.9
General Surgery	29	13.6	184	86.4
Orthopedic Surgery	19	13.7	120	86.3
Ophthalmology	26	16.2	135	83.9
Urology	25	14.0	153	86.0
Obstetrics and Gynecology	43	16.8	213	83.2
Cardiovascular Surgery	20	12.8	136	87.2
Other Surgery	24	13.9	149	86.1
Psychiatry	30	14.8	173	85.2
Anesthesiology	20	9.7	187	90.3
Radiology	24	13.9	149	86.1
Other Specialties	23	13.3	150	86.7

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 7
COMPARISON OF EARLY AND LATE RESPONDERS: LAST TWO MONTHS

Characteristic	Survey Completed In Last Two Months (n=851) Mean	Survey Completed In Last Two Months (n=851) Standard Deviation	Survey Completed Before Last Two Months (n=2,505) Mean	Survey Completed Before Last Two Months (n=2,505) Standard Deviation	t-value	
Availability						
Number of weeks did not practice in 1988	3.9	2.6	4.2	2.9	2.71	***
Number of hours worked in last week	59.3	17.0	59.0	15.8	-0.44	
"Red-Tape" Effect						
Number of full-time equivalents	7.9	23.7	4.9	11.9	-3.50	***
"Non-MD Gatekeeper" Effect						
Number of employees	20.0	60.7	16.2	51.0	-1.65	*
Number of administrative employees	9.2	24.6	7.9	21.9	-1.35	
Opportunity Costs						
Physician's wage	$ 60.9	$ 58.5	$ 62.0	$ 47.4	0.52	
Physician's net income	$ 163,744	$ 149,504	$ 165,153	$ 118,712	0.25	
Attitude						
Medicare caseload (%)	32.1	22.3	33.1	22.3	1.07	
Medicaid caseload (%)	8.9	11.9	8.7	11.0	-0.39	
Demographics						
Physician's age	46.6	10.3	46.6	10.5	0.08	

* Statistically significant at 0.10 level or better.
** Statistically significant at 0.05 level or better.
*** Statistically significant at 0.01 level or better.

Source: 1988 Physicians's Practice Costs and Income Survey

TABLE 8
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST TWO MONTHS

	Survey Completed In Last Two Months		Survey Completed Before Last Two Months	
Characteristic	n	%	n	%
"Red-Tape" Effect				
Practice is incorporated (chi-sq.=.295, p=.587)				
No	344	25.9	985	74.1
Yes	507	25.1	1,517	75.0
Physician is an employee (chi-sq.=24.231, p=.000)				
No	709	24.0	2,246	76.0
Yes	142	35.4	259	64.6
Practice is multispecialty (chi-sq.=2.848, p=.091)				
No	714	24.8	2,162	75.2
Yes	136	28.5	342	71.6
Physician is a solo practitioner (chi-sq.=6.546, p=.011)				
No	476	27.3	1,270	72.7
Yes	375	23.4	1,277	76.6
Attitude				
Accepts Medicare patients (chi-sq.=.003, p=.957)				
No	57	25.2	169	74.8
Yes	794	25.4	2,334	74.6
Accepts Medicaid patients (chi-sq.=.556, p=.456)				
No	139	26.7	382	73.3
Yes	712	25.1	2,121	74.9
Replicate				
(chi-sq.=24.273, p=.019)				
1	56	22.1	198	78.0
2	55	21.7	199	78.4
3	79	27.2	212	72.9
4	49	20.7	188	79.3
5	68	27.5	179	72.5
6	70	26.3	196	73.7
7	69	26.1	195	73.9
8	68	24.1	214	75.9
9	57	23.3	188	76.7
10	60	22.8	203	77.2
12	64	24.2	201	75.9
13	86	35.8	154	64.2
14	70	28.2	178	71.8

TABLE 8, cont'd.
CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST TWO MONTHS

	Survey Completed In Last Two Months		Survey Completed Before Last Two Months	
Characteristic	n	%	n	%
Demographics				
Gender (chi-sq.=.877 p=.349)				
Male	783	25.2	2,329	74.8
Female	68	27.9	176	72.1
Race (chi-sq.=.001, p=.980)				
Non-white	142	25.3	420	74.7
White	697	25.2	2,067	74.8
Graduate of a foreign medical school (chi-sq.=.017, p=.897)				
No	669	25.4	1,964	74.6
Yes	182	25.2	541	74.8
Board certified (chi-sq.=.697, p=.404)				
No	218	26.5	606	73.5
Yes	633	25.0	1,899	75.0
SMSA (chi-sq.=6.614, p=.010)				
Rural	175	21.9	624	78.1
Urban	676	26.4	1,881	73.6
Region (chi-sq.=.961, p=.811)				
Northeast	186	26.7	511	73.3
Midwest	182	24.6	559	75.4
South	296	25.0	886	75.0
West	187	25.4	549	74.6

(Continued on next page)

TABLE 8, cont'd.

CHARACTERISTICS OF EARLY AND LATE RESPONDERS: LAST TWO MONTHS

Characteristic	Survey Completed In Last Two Months n	%	Survey Completed Before Last Two Months n	%
Specialty				
(chi-sq.=33.658, p=.004)				
GP/FP	128	31.5	279	68.6
Internal Medicine	116	32.3	243	67.7
Cardiology	26	18.7	113	81.3
Gastroenterology	41	29.5	98	70.5
Other Medical	72	25.7	208	74.3
General Surgery	51	23.9	162	76.1
Orthopedic Surgery	27	19.4	112	80.6
Ophthalmology	38	23.6	123	76.4
Urology	36	20.2	142	79.8
Obstetrics and Gynecology	70	27.3	186	72.7
Cardiovascular Surgery	38	24.4	118	75.6
Other Surgery	40	23.1	133	76.9
Psychiatry	47	23.2	156	76.9
Anesthesiology	41	19.8	166	80.2
Radiology	37	21.4	136	78.6
Other Specialties	43	24.9	130	75.1

Source: 1988 Physicians' Practice Costs and Income Survey.

TABLE 9
FACTORS ASSOCIATED WITH LATE RESPONSE TO THE 1988 PPCIS

Variable	Mean	Standard Deviation	Parameter Estimates For Responses In the Last Two Weeks (Late1)	Parameter Estimates For Responses In the Last Month (Late2)	Parameter Estimates For Responses In the Last Two Months (Late3)
Availability					
Number of weeks did not practice in 1988	4.08	2.70	-0.0372	-0.0468 *	-0.0454 **
Number of hours worked in last week	59.07	15.94	0.0032	0.0060 *	0.0033
Red-tape					
Number of FTE physicians	5.58	16.10	0.0135 ***	0.0101 ***	0.0199 ***
Physician is a solo practitioner	0.48	0.50	-0.3072 *	-0.1404	-0.0811
Physician is an employee	0.11	0.31	0.5324 **	0.7700 ***	0.6836 ***
Practice is multispecialty	0.14	0.35	-0.4875 *	-0.2220	-0.1055
Non-MD Gatekeeper					
Number of non-MD employees	16.94	53.12	-0.0023	-0.0017	-0.0029 *
Attitude					
Percent of revenues from Medicare and Medicaid	41.10	23.60	0.0002	-0.0016	-0.0012
Opportunity Costs					
Physician's hourly wage	$ 63.34	$ 138.42	0.0029 **	0.0018 *	0.0019 **
Replicate					
2	0.08	0.27	-0.0971	-0.1291	-0.0036
3	0.09	0.28	0.1559	-0.0001	0.3736 *
4	0.07	0.25	-0.7749 *	-0.1848	-0.0958
5	0.07	0.26	0.1651	0.2950	0.3461
6	0.08	0.27	-0.0854	0.0142	0.2459
7	0.08	0.27	-0.0179	-0.0292	0.0989
8	0.08	0.28	-0.8171 **	-0.2435	0.0247
9	0.07	0.26	-0.1052	0.1446	0.1481
10	0.08	0.27	-0.5954	-0.2200	-0.0147
12	0.08	0.27	-0.1948	-0.0641	0.1674
13	0.07	0.26	0.2790	0.3838	0.7058 ***
14	0.07	0.26	-0.4608	-0.0052	0.4389 **
(Replicate 1 is omitted)					
Demographics					
Physician's age	46.59	10.49	0.0796	0.0981 **	0.0709 *
Physician's age-squared	2,281	1,055	-0.0008	-0.0009 **	-0.0007 *
Physician is female	0.07	0.26	0.3244	0.0742	0.1872
Physician race is white	0.83	0.38	-0.1653	-0.0805	-0.0505
Physician is a foreign medical graduate	0.22	0.41	0.1221	0.1717	-0.0706
Physician is board certified	0.75	0.43	-0.2034	-0.1423	-0.0578
Urban practice	0.75	0.43	0.1957	0.2133	0.2835 ***
Practice is in the Midwest	0.22	0.41	-0.2057	-0.0894	0.0121
Practice is in the South	0.35	0.48	-0.1583	0.0263	0.0198
Practice is in the West	0.22	0.42	-0.1836	-0.0743	0.0522
(Northeast is omitted)					

TABLE 9, cont'd.
FACTORS ASSOCIATED WITH LATE RESPONSE TO THE 1988 PPCIS

Variable	Mean	Standard Deviation	Parameter Estimates For Responses In the Last Two Weeks (Late1)	Parameter Estimates For Responses In the Last Month (Late2)	Parameter Estimates For Responses In the Last Two Months (Late3)
Specialty					
Internal Medicine	0.11	0.31	0.0586	0.0981	0.0857
Cardiology	0.01	0.20	-0.7116	-0.5475 *	-0.9397 ***
Gastroenterology	0.04	0.20	-0.3915	-0.0857	-0.2822
Other Medical	0.09	0.28	-0.0449	-0.1898	-0.4833 **
General Surgery	0.06	0.24	-0.3814	-0.4886 *	-0.4727 **
Orthopedic Surgery	0.04	0.20	0.2000	-0.3937	-0.7469 ***
Ophthalmology	0.04	0.20	-0.3637	-0.1705	-0.5539 **
Urology	0.05	0.23	-0.2160	-0.1811	-0.5865 ***
Obstetrics and Gynecology	0.08	0.27	-0.0364	-0.2045	-0.4505 **
Cardiovascular Surgery	0.04	0.20	-0.4472	-0.6612 **	-0.6113 **
Other Surgery	0.05	0.22	-0.1697	-0.3805	-0.5533 **
Psychiatry	0.06	0.24	0.2905	-0.1931	-0.4504 **
Anesthesiology	0.06	0.23	-0.7211 *	-0.7060 **	-0.8625 ***
Radiology	0.05	0.21	-0.1508	-0.4509	-0.8206 ***
Other Specialties	0.05	0.21	-0.2239	-0.3679	-0.4385 *
(GP/FP is omitted)					
Log Likelihood			76.928 (p=.0029)	80.041 (p=.0014)	136.815 (p=.0001)
Percent Correctly Classified			92.4	85.7	75.5
N			2,922	2,922	2,922

* Statistically significant at 0.10 level or better.
** Statistically significant at 0.05 level or better.
*** Statistically significant at 0.01 level or better.

Source: 1988 Physicians' Practice Costs and Income Survey.

FIGURE 1

NUMBER OF COMPLETED CASES BY MONTH: ALL PHYSICIANS

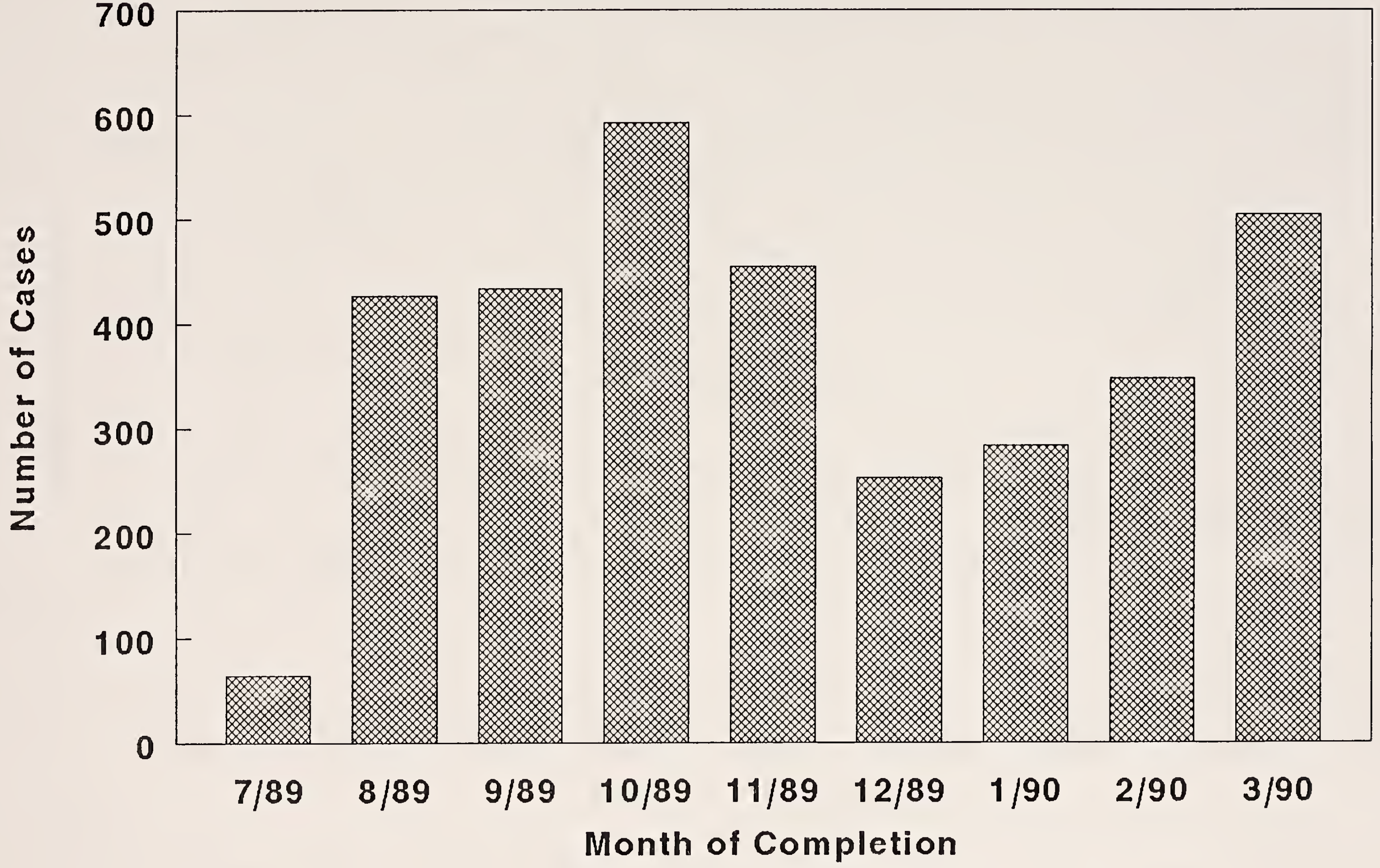
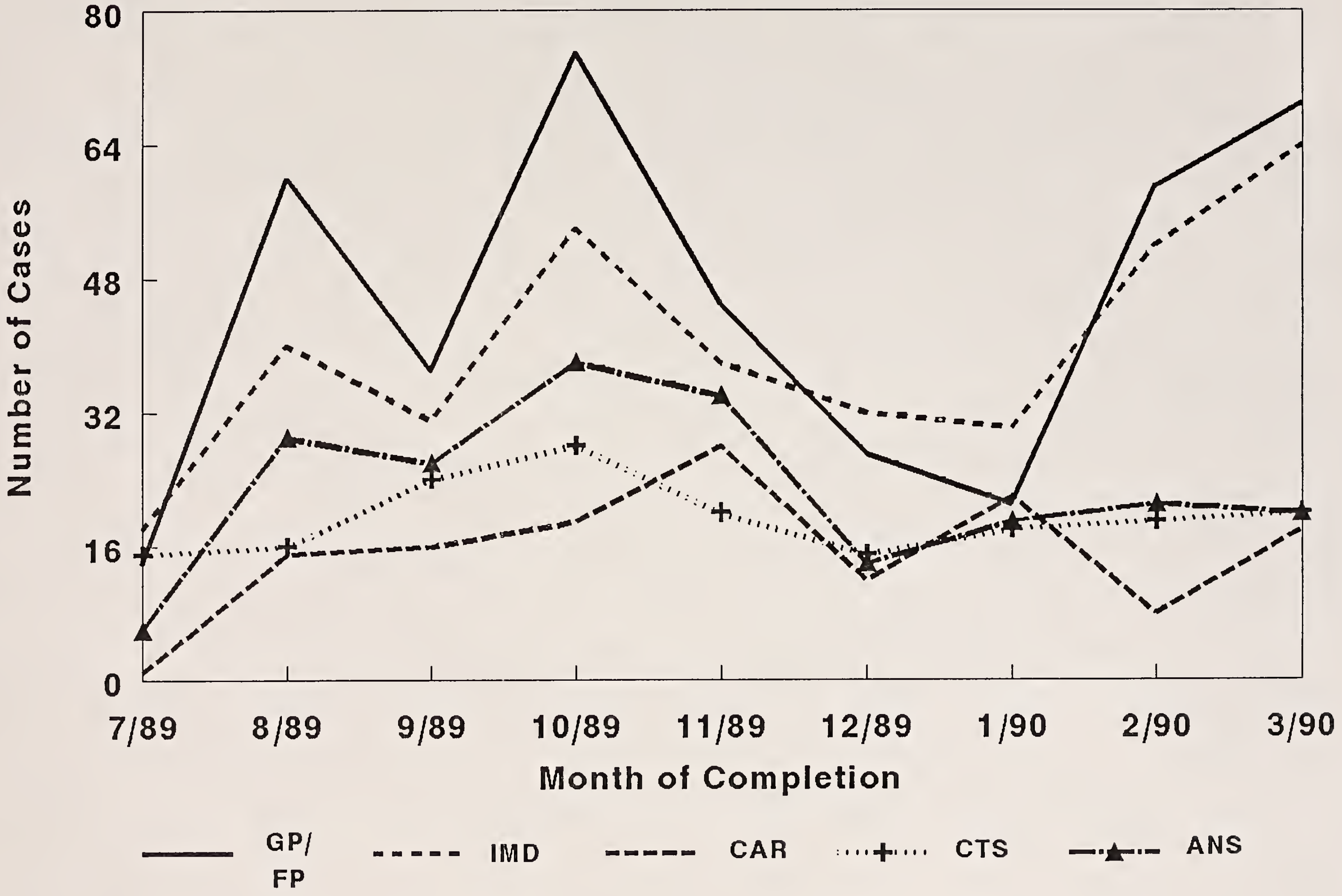


FIGURE 2

NUMBER OF COMPLETED CASES BY MONTH: SELECTED SPECIALTIES



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